

I. Rejections Under 35 U.S.C. §112, second paragraph

1. According to Paragraph 4 of the Office Action, claims 37-50 are rejected under 35 U.S.C. §112, second paragraph as being incomplete for omitting allegedly essential elements, such omission allegedly amounting to a gap between the elements. Applicant respectfully traverses this rejection.

The Office Action states that “the simulator has not been described,” that the “production scheduling model...has not been described,” and that the “virtual/electronic Kanban...has not been described,” and cites MPEP § 2172.01.

Applicant notes that this is not a proper §112, second paragraph rejection, which would address indefiniteness. MPEP §2172.01, which is cited in the Office Action for authority, exclusively addresses §112, first paragraph rejections. Accordingly, Applicant is uncertain what the Office Action is stating, thereby making this rejection confusing, and accordingly this rejection is improper, and must be withdrawn.

In order to advance prosecution, Applicant will address this rejection under either §112, first or second paragraph. Applicant traverses this rejection. The requirements of §112, first and second paragraphs are separate and distinct. A claim is not required to enable one of ordinary skill in the art to make and use the invention to be considered definite under §112, second paragraph. Rather, the specification is required to “describe the invention...in such detail as to enable a person skilled in the most relevant art to make and use it.” See In re Naquin, 398 F.2d 863, 158 USPQ 317, 319 (C.C.P.A. 1968)(citing International Standard Elec. Corp. v. Ooms, 157 F.2d 73, 70 USPQ 32 (D.C. Cir. 1946)).

Furthermore, a claim is not required to provide a written description of the invention to be considered definite under §112, second paragraph. Rather, the specification is required to describe the invention so that “persons of ordinary skill in the art will recognize from the disclosure that appellants invented processes including those limitations.” See In re Wertheim, 541 F.2d 257, 191 USPQ 90, 96 (C.C.P.A. 1976)(citing In re Smythe, 480 F.2d 1376, 1383, 178

USPQ 279, 284 (C.C.P.A. 1973)). See also Forssmann v. Matsuo, 23 USPQ 2d 1548, 1550 (B.P.A.I. 1992) and Miles Lab., Inc. v Shandon Inc., 997 F.2d 870, 27 USPQ 2d 1123 (Fed. Cir. 1993). The Federal Circuit also instructs that claims are not required to provide a written description of the invention. See Orthokinetics Inc. v. Safety Travel Chairs Inc., 806 F.2d 1565, 1 USPQ 2d 1081 (Fed. Cir. 1986).

Applicants believe that claims 37-50 are complete, and contain all the essential elements required of patent claims. The simulator is described variously throughout the specification, for example, in Fig. 2 and at page 5, lines 5-20. The production scheduling model is described variously throughout the specification, for example, in Fig. 2 and at page 6, lines 6-10. The virtual/electronic Kanban is described variously throughout the specification, for example, at page 17, lines 5-21.

Accordingly, the Office Action rejection that pending claims 37-50 are incomplete for allegedly omitting essential elements, and that these alleged omissions do not describe certain components, must, therefore, be withdrawn.

Furthermore, this rejection addresses both apparatus claims 37-40 and method claims 41-50. Applicant assumes that this rejection was meant to apply only to claims 37-40. Applicant believes that this is a reasonable and valid assumption. If the Examiner desires to hold otherwise, then this rejection must be withdrawn for vagueness and therefor improper.

Even if this rejection was meant to address method claims, Applicant is not aware of ANY requirement that method claims must describe structural elements. Withdrawal of this rejection is respectfully solicited.

2. According to Paragraph 5 of the Office Action, claims 37-50 are rejected under 35 U.S.C. §112, second paragraph as being incomplete for omitting allegedly essential elements, such omission allegedly amounting to a gap between the elements. Applicant respectfully traverses this rejection.

The Office Action states that the steps of the simulation have not been described, that how the step of determination of the validity of the Kanban is done is not described, how the manufacturing line is controlled is not described, and for claim 37, the Office Action asks what happens if the Kanban is not determined to be valid. The Office Action also cites MPEP § 2172.01.

Applicant notes that this is not a proper §112, second paragraph rejection, which would address indefiniteness. Additionally, MPEP §2172.01, which is cited by the examiner for authority, exclusively address §112, first paragraph rejections. Accordingly, Applicant is uncertain what the Office Action is stating, thereby making this rejection confusing, and accordingly this rejection is improper, and must be withdrawn.

In order to advance prosecution, applicant will address this rejection under either §112, first or second paragraph. Applicant traverses this rejection. The requirements of §112, first and second paragraphs are separate and distinct. A claim is not required to enable one of ordinary skill in the art to make and use the invention to be considered definite under §112, second paragraph. Rather, the specification is required to “describe the invention...in such detail as to enable a person skilled in the most relevant art to make and use it.” See In re Naquin, 398 F.2d 863, 158 USPQ 317, 319 (C.C.P.A. 1968)(citing International Standard Elec. Corp. v. Ooms, 157 F.2d 73, 70 USPQ 32 (D.C. Cir. 1946)).

Furthermore, a claim is not required to provide a written description of the invention to be considered definite under §112, second paragraph. Rather, the specification is required to describe the invention so that “persons of ordinary skill in the art will recognize from the disclosure that appellants invented processes including those limitations.” See In re Wertheim, 541 F.2d 257, 191 USPQ 90, 96 (C.C.P.A. 1976)(citing In re Smythe, 480 F.2d 1376, 1383, 178 USPQ 279, 284 (C.C.P.A. 1973)). See also Forssmann v. Matsuo, 23 USPQ 2d 1548, 1550 (B.P.A.I. 1992) and Miles Lab., Inc. v Shandon Inc., 997 F.2d 870, 27 USPQ 2d 1123 (Fed. Cir. 1993). The Federal Circuit also instructs that claims are not required to provide a written

description of the invention. See Orthokinetics Inc. v. Safety Travel Chairs Inc., 806 F.2d 1565, 1 USPQ 2d 1081 (Fed. Cir. 1986).

Furthermore, this rejection addresses both apparatus claims 37-40 and method claims 41-50. Applicant assumes that this rejection was meant to apply only to the method claims 41-50. Since the text of the rejection appears to refer only to “steps”, Applicant believes that this is a reasonable and valid assumption. It would make no sense to reject apparatus claims for lacking method steps. If the Examiner desires to hold otherwise, then this rejection must be withdrawn for vagueness and therefor improper.

Applicants believe that claims 37-50 are complete, and contain all the essential elements required of patent claims. Addressing “simulation: Claim 41 recites the step of “inputting the electronic kanban and the feedback data to a simulator and simulating the manufacturing production line.” Support for this step can be found variously in the specification, for example, at page 5, lines 5-20. This is a step recited in the claim, and meets all claim structure requirements. Detailed steps of the simulation need not be recited in the claim. Applicant believes that the allegation that “the steps [of the simulation] have not been described” is wholly without merit or support.

Addressing how the validity of the kanban is determined, Claim 41 recites the step of “determining the validity of the kanban.” Support for this step can be found variously in the specification, for example, at page 5, lines 5-20. This step meets all claim structure requirements. Applicant is claiming the step of determining the validity of the kanban: the preferred embodiment of how this is done can be found in the specification, for example, at page 5, lines 5-20. Accordingly, there is no omission amounting to a gap between any steps, and Applicant believes that this allegation is wholly without merit or support.

Addressing the allegation that how the manufacturing line is controlled is omitted, Applicant does not understand what the Examiner is alleging. The preamble of claim 41 recites “A method for controlling a manufacturing production line....” Support for this preamble is the specification. How the manufacturing production line is controlled is recited in the steps recited

in the body of the claim. Accordingly, there is no omission amounting to a gap between any steps, and Applicant believes that this allegation is wholly without merit or support.

Addressing the allegation that, regarding claim 37, the Office Action asks the question what happens if the Kanban is not determined to be valid, Applicant does not see a reason for this rejection. Claim 37 is an apparatus claim, and the Applicant believes that this portion of the rejection is improper for failing to state the rejection with specificity and therefore there is no rejection requiring a response. Even if this portion of the rejection is interpreted by the Applicant as applying to claim 41, it is outside the scope of claim 41, because claim 41 recites the step of "determining the validity of the electronic kanban." To address the situation when the kanban is determined to be invalid, the Examiner is directed to dependent claim 43.

Accordingly, the Office Action rejection that the pending claims 37-50 are incomplete for allegedly omitting essential elements, and that these alleged omissions do not describe certain components, must, therefore, be withdrawn.

Since all the terms in the claims are in fact definite, withdrawal of this rejection is requested.

3. According to Paragraph 6 of the Office Action, the Office Action alleges that with regards to claims 37-50 "...it is unclear what method/process applicant is intending to encompass", and further alleges that "There are no limitations directed at anything more than a generation of a schedule." Applicant believes that no rejection has been stated by the Examiner, merely an opinion.

However, in order to advance prosecution of this application, Applicant will address paragraph 6 of the Office Action as an attempt to reject the pending claims 37-50 under §112, first or second paragraph, similarly to paragraphs 4 and 5 of the Office Action. Accordingly, Applicant disagrees with the examiner's opinion, and traverses the rejection.

The requirements of §112, first and second paragraphs are separate and distinct. A claim is not required to enable one of ordinary skill in the art to make and use the invention to be

considered definite under §112, second paragraph. Rather, the specification is required to “describe the invention...in such detail as to enable a person skilled in the most relevant art to make and use it.” See In re Naquin, 398 F.2d 863, 158 USPQ 317, 319 (C.C.P.A. 1968)(citing International Standard Elec. Corp. v. Ooms, 157 F.2d 73, 70 USPQ 32 (D.C. Cir. 1946)).

Furthermore, a claim is not required to provide a written description of the invention to be considered definite under §112, second paragraph. Rather, the specification is required to describe the invention so that “persons of ordinary skill in the art will recognize from the disclosure that appellants invented processes including those limitations.” See In re Wertheim, 541 F.2d 257, 191 USPQ 90, 96 (C.C.P.A. 1976)(citing In re Smythe, 480 F.2d 1376, 1383, 178 USPQ 279, 284 (C.C.P.A. 1973)). See also Forssmann v. Matsuo, 23 USPQ 2d 1548, 1550 (B.P.A.I. 1992) and Miles Lab., Inc. v Shandon Inc., 997 F.2d 870, 27 USPQ 2d 1123 (Fed. Cir. 1993). The Federal Circuit also instructs that claims are not required to provide a written description of the invention. See Orthokinetics Inc. v. Safety Travel Chairs Inc., 806 F.2d 1565, 1 USPQ 2d 1081 (Fed. Cir. 1986).

Claims 37-40 are apparatus claims reciting a system for controlling a manufacturing production line. Claims 41-50 are method claims reciting a method for controlling a manufacturing production line. Support for manufacturing production line can be found variously within the specification, for example, at page 3, lines 8-15. The Office Action alleges that the claims do not set forth any steps involved in the method/process. With respect to claims 37-40, this is correct, as they are apparatus claims and do not recite nor require that steps be recited. With respect to claims 41-50, the “use” is recited in the preamble, while the steps are recited in the body of the claim.

Accordingly, the structure and format of the claims are in fact proper and complete. Withdrawal of any §112, first or second paragraph rejection which may be read from paragraph 6 of the Office Action is traversed, and must be withdrawn for the reasons discussed above.

## II. Claim Interpretations

The Office Action at paragraph 7 states the Examiner's interpretation of the claims. This interpretation alleges that the invention is the "real-time optimization of a production routing schedule using feedback as input to a simulator." Additionally, the interpretation in the Office Action further alleges that the electronic/virtual Kanban is the "electronic tracking of items in a manufacturing line." Lastly, the Office Action states that these concepts have allegedly been disclosed in the prior art.

Applicant disagrees with the interpretations offered in the Office Action, as the claims must be "given the broadest reasonable interpretation consistent with the specification." MPEP §2111.

Claim 37 recites a system for controlling a manufacturing production line using a virtual kanban system. The system includes a production scheduling model that includes the virtual kanban system. The virtual kanban system outputs an electronic kanban that represents a production routing schedule. A database stores the production scheduling model and production line feedback data.

The feedback data comprises two data sets. The first data set specifies the equipment in the production line. The second data set specifies at least one of operating status of the equipment, product lot status and production input status.

A simulator that simulates operation of the production line receives as input the electronic kanban and production line feedback data. The simulator determines the validity of the electronic kanban by running the simulator. If the electronic kanban is valid, the electronic kanban is output and a work schedule is generated.

In this manner, a production model generates the electronic kanban based on optimization and predetermined formula and rules. The electronic kanban is input to a simulator for verification. That is, the simulator is a model of the production process, and is used to test the

validity of the kanban. If the kanban is valid, the simulator output the kanban. Claim 41 recites a method for using the production model and the simulator described above.

Accordingly, the Examiner's interpretation is incomplete and, consequently, inaccurate and unwarranted. The claim language is unambiguous and the elements of each claim is clear on its face.

The Examiner is reminded, as stated by Applicant's Representative during the August 1 personal interview, that the Applicant is not claiming a simulation of a kanban system, nor the unity of the kanban with the simulator. Rather, the production model generates an electronic kanban for input to a simulator prior to release of the electronic kanban to, for example, a production process. According to the specification at page 16, line 23 to page 17, line 14, the scheduler 32 performs simulation runs on the production model using the kanban worksheets. The kanban worksheets are virtual, or electronic, and are generated using a Kanban Design Module and stored in the scheduler database 30. See page 4, lines 22 – 23 and Fig. 2.

The interpretation of the claims suggested by the Examiner are inconsistent with the claim language and the specification. Accordingly, the interpretation of the claims by the Examiner are without merit, and must be withdrawn.

### III The Claims are Allowable Over the Art of Record

1. The Office Action rejects claims 37-50 under 35 U.S.C. §102(a) as being anticipated by De Toni et al. in paragraphs 9-10 of the Office Action. Applicant respectfully traverses this rejection.

The Examiner has the burden of presenting a prima facie case of anticipation. See In re King, 801 F.2d 1324, 1327, 231 USPQ 136, 138-139 (Fed. Cir. 1986); In re Wilder, 429 F.2d 447, 450, 166 USPQ 545, 548 (C.C.P.A. 1970). Additionally, the claim must first be correctly construed to define the scope and meaning of each contested limitation. See In re Paulsen, 30 F.3d 1475, 1479, 31 USPQ 2d 1671, 1674 (Fed. Cir. 1994). As discussed above, the Examiner



has incorrectly construed the claims to define their scope and meaning. Accordingly, this rejection is improper and must be withdrawn.

Additionally, the Examiner is attempting to apply, in a §102 rejection, no less than 15 references that are not of record and have not been supplied to the Applicant. The Examiner is hereby requested to supply to the Applicant all references cited or applied in Paragraph 9 of this Office Action, or withdraw this rejection. Accordingly, this rejection is improper and must be withdrawn.

Furthermore, the rejection is not phrased in such a manner that can be interpreted as a proper rejection. The Examiner has not identified all the elements in the claims 37-50, nor has the Examiner shown, with specificity, where in the reference each element of Applicant's invention is allegedly disclosed. It is incumbent upon the Examiner to identify where in the reference each element may be found. Ex parte Levy, 17 U.S.P.Q.2d 1461 (BPAI 1990). If the examiner believes that referring to additional references not of record is a showing of specificity within the reference, then the examiner must supply the references, and withdraw finality of this Office Action. Accordingly, this rejection is improper, and must be withdrawn.

Furthermore, if the examiner does supply the references that are not of record and maintains this rejection, the rejection must be withdrawn as being an improper 35 U.S.C. §102 rejection, and the finality of this Office Action must be withdrawn.

De Toni et al discloses an artificial, intelligence-based production scheduler. The article discloses that the authors have "developed an expert system for scheduling in make-to-order firms." The expert system is a production scheduler with model-based reasoning. The main field of applicability is stated as being made to order firms. The scheduler uses a hybrid push/pull approach to schedule and "exploits the expert system technology in order to obtain satisfactory solutions." De Toni discloses a version of just-in-time manufacturing, known as Kanban. At page 19, De Toni et al disclose "simulation mode," and state that "for each customers order aggregation, a work centre loading is simulated as a consequence of the release of customer orders of that aggregation, in the form of production orders at each work centre."

This simulator, by its very nature, is the Kanban generating the schedule.

The simulator of De Toni is **NOT** the simulator recited in claims 37 and 41, which simulates operation of the production line and receives as input the electronic kanban from the production scheduling model.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since De Toni et al. fails to disclose, either explicitly or implicitly, at least the above-noted feature recited in independent claims 37 and 41, De Toni et al. cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

2. The Office Action rejects claims 37-50 under 35 U.S.C. §102(a) as being anticipated by U.S. Patent 5,554,348 to Umeda et al. (of record), or Seppanen (IEEE, 1993 - of record), or Wiwakanond et al. (of record), or Corbett et al. (of record), or Tantry et al. (of record), or Natarajan (of record), or Parad (of record), or Korncoff et al. (of record), or Weaver et al. (of record) or Lee et al. (of record) or Liberatore et al (ETFA, 1995) or Jain et al (1989 Winter Sim. Proc.) or Roberts et al (1991 Winter Sim. Proc.) or Umeda (1992 Winter Sim. Proc.) or Bouchentouf-Idriss et al or Harmonosky (1995 Winter Sim. Proc.) or Marriott (1994 Winter Sim. Proc.) or Krishnamurthi et al. (1993 Winter Sim. Proc.) or Manivannan et al. (1991 Winter Sim. Proc.). Applicant respectfully traverses these rejections.

Given the **unusually large number of 19 references**, which includes the addition of 9 new references, in order to advance prosecution, Applicant will address each reference in order.

Additionally, the Examiner is again reminded that the Applicant is not claiming a simulation of a kanban system, nor the unity of the kanban with the simulator. Rather, the production model generates an electronic kanban for input to a simulator prior to release of the electronic kanban to, for example, a production process. According to the specification at page 16, line 23 to page 17, line 14, the scheduler 32 performs simulation runs on the production model using the kanban worksheets. The kanban worksheets are virtual, or electronic, and are generated using a Kanban Design Module and stored in the scheduler database 30. See page 4, lines 22 – 23 and Fig. 2.

(i) Umeda et al. '348 discloses a simulation technique suitable for processing discrete events in a production system. To accomplish this, a general purpose simulator models the production process that can be defined with a material requirement calculation program (push-type) or a kanban system (pull-type) as an incorporated model. In this manner, a production process simulator outputs production process parameters to the kanban model. See col. 2, lines 33-63, col. 3, lines 3-43. This is a simulation of a kanban system.

Umeda '348 does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Umeda '348 does not disclose, teach or suggest determining the validity of the kanban by the simulator, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Umeda '348 fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Umeda '348 cannot anticipate these claims. At least in

view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(ii) Seppanen (IEEE, 1993 - of record) discloses a kanban simulator. As stated in the abstract, "Both a traditional "Push" and a "Kanban" or "Pull" mode of production control were...simulated with an ability to switch between the two modes." This is a production control simulator that can include a kanban model.

Seppanen (IEEE, 1993) does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Seppanen (IEEE, 1993) does not disclose, teach or suggest determining the validity of the kanban by the simulator, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Seppanen (IEEE, 1993) fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Seppanen (IEEE, 1993) cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(iii) Wiwakanond et al. (IEEE – 1996) disclose the development of two different kanban-based simulators. The first simulator is based on make-to-stock, the other made-to-order. Kanbans are generated and output.

Wiwakanond et al. does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Wiwakanond et al. does not disclose, teach or suggest determining the validity of the kanban by the simulator, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Wiwakanond et al. fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Wiwakanond et al. cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(iv) Corbett et al. (1993 Winter Sim. Proc.) is a review paper, that is, one that reviews papers, in this instance, modeling of just-in-time, or kanban systems. The Office Action, at paragraph 15, states “See particularly ... list of references.” Applicant objects to this rejection as improper, as well as a blatant attempt by the examiner to introduce and apply numerous references not of record. Applicant requests that these references be

supplied and addressed individually, with particularity, or this rejection must be withdrawn.

As a review paper, Corbett et al. does not disclose or teach anything. According to the abstract, "The objective of this paper is ... to critically review selected papers, ... highlight their approach, point out deficiencies, ... and suggest new directions for research." At best, Corbett et al. suggests further research, and no details are presented because of the nature of the article. As acknowledged by the examiner during the August 1, 2000 Personal Interview, this reference, along with the other applied art previously of record, addresses a simulation of a kanban, and that the art does not disclose, teach or suggest a separate production model that generates an electronic kanban and a simulator for receiving the electronic kanban and determining the validity of the electronic kanban prior to release of the electronic kanban.

Accordingly, Corbett et al. does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Corbett et al. does not disclose, teach or suggest determining the validity of the kanban by the simulator, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Corbett et al. fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Corbett et al. cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well

as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(v) Tantry et al. '336 disclose an object-oriented architecture for factory floor management. Factory floor entities are modeled as factory floor objects within a relational database. The database includes a library which contains objects that model all factory elements.

Tantry et al. '336 does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Tantry et al. '336 does not disclose, teach or suggest determining the validity of the kanban by the simulator, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Tantry et al. '336 fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Tantry et al. '336 cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(vi) Natarajan '628 discloses an automated production dispatch system with feedback control. This system is used after orders are released and production disruption is

encountered on the shop floor. The system analyzes the current dispatch rules, using a simulation process, to determine if those rules satisfy management criteria. The system then recommends the rule to be used. If the dispatch rules are interpreted as kanbans, the system only analyzes the kanbans after a problem has occurred on the shop floor.

Natarajan '628 does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Natarajan '628 does not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Natarajan '628 fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Natarajan '628 cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(vii) Parad '570 discloses a method and apparatus for continuous integrated resource management that supports just-in-time manufacturing. Parad '570 provides a notification of exceptions describing present and prospective resource scheduling in real-time. "Timely and accurate information is used to pinpoint resource bottlenecks and determine the most appropriate action." See col. 5, lines 59-64.



Parad '570 does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Parad '570 does not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Parad '570 fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Parad '570 cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(viii) Korncoff et al. '447 discloses an exception processor system adapted to receive alarms from a cell controller indicating the occurrence of an unplanned event or that an exception has occurred. The exception processor implements an automated recovery procedure that responds to the alarms, corrects the exception, and returns the cell to normal operation. In other words, the exception processing system "is designed to monitor operation of a manufacturing facility, and to correct and anticipate unplanned events..." See col. 2, lines 39-42.

Korncoff et al. '447 does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the

simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Korncoff et al. '447 does not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Korncoff et al. '447 fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Korncoff et al. '447 cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(ix) Weaver et al. '671 discloses a look-ahead method for determining optimum production schedules for an early production steps by monitoring in-process part queues at subsequent potential bottleneck production steps and controlling the product mix at the early production steps.

Weaver et al. '671 does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Weaver et al. '671 does not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Weaver et al. '671 fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Weaver et al. '671 cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(x) Lee et al. '970 discloses "an integrated management system suitable for use for the purposes of managing the distribution to the factory floor as well as the distribution throughout a factory of the information which is required to effectuate the manufacture of products on the factory floor." See col. 5, lines 30-37.

Lee et al. '970 does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Lee et al. '970 does not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Lee et al. '970 fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Lee et al. '970 cannot anticipate these claims.

At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(xi) Liberatore et al. (ETFA, 1995) discloses a method of dynamically allocating kanbans in a manufacturing system using finite perturbation analysis. The “online control strategy reacts to unknown changes in the production scenario ... by varying the number of kanbans of the different part-type worked by the system. See page 601, last paragraph.

Liberatore et al. does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Liberatore et al. does not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Liberatore et al. fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Liberatore et al. cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination.

Withdrawal of this rejection is respectfully requested.

(xii) Jain et al. (1989 Winter Sim. Proc.) discloses an expert system scheduler to enable manufacturing plants to generate viable schedules given various constraints and demands for flexibility. A factory control system contains current data on customer orders and on the expected material receipts, and a new schedule is generated when the situation warrants a new schedule. See page 932, col. 2, last paragraph to page 933, col. 1, first paragraph. At no point is the validity of the schedule determined by running through a simulator prior to release to the plant floor.

Jain et al. does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Jain et al. does not disclose, teach or suggest determining the validity of the kanban by the simulator **prior** to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Jain et al. fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Jain et al. cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(xiii) Roberts et al. (1991 Winter Sim. Proc.) discloses object oriented simulation tools necessary for a flexible batch process management architecture. Two simulation assistants were proposed having the capability of using the plant specifications and modeling knowledge to construct simulation models. The Office Action quotes verbatim section 5 of this reference. When read in view of Fig1 on page 325, as well as the rest of the reference, that this simulator is NOT verifying the validity of a control code, or kanban prior to release, rather, this simulation assistant is merely processing the changes in system states and maps these states to the generic control code specification. In fact, the simulator is a “virtual plant,” and cannot determine validity of the control code, or kanban and cannot release the kanban to the manufacturing process.

Roberts et al. does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Roberts et al. does not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Roberts et al. fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Roberts et al. cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination.

Withdrawal of this rejection is respectfully requested.

(xiv) Umeda (1992 Winter Sim. Proc.) discloses a “virtual plant system” concept that “combines real-time monitoring system with on-line factory simulation...” See page 897 and Fig. 10. The planning system send plant control information to BOTH the actual plant and the virtual plant. At no point does the virtual plant determine the validity of the control information. Rather, the virtual plant mimics the actual plant.

Umeda does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Umeda does not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Umeda fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Umeda cannot anticipate these claims. At lease in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(xv) Bouchentouf-Idriss et al. discloses designing a kanban manufacturing system using a server network generator CASE tool. Bouchentouf-Idriss et al. offers a long discussion on what kanban is, and how a manufacturing floor responds to the kanban..

Bouchentouf-Idriss et al. do not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Bouchentouf-Idriss et al. do not disclose, teach or suggest determining the validity of the kanban by the simulator prior to or following release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Bouchentouf-Idriss et al. fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Bouchentouf-Idriss et al. cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(xvi) Harmonosky (1995 Winter Sim. Proc.) is a review paper, that is, one that reviews papers, in this instance, simulation-based real-time scheduling: review of recent developments. Applicant objects to this rejection as improper, as well as a blatant attempt by the examiner to introduce and apply numerous references not of record. Applicant requests that these references be supplied and addressed individually, with particularity, or this rejection must be withdrawn.

As a review paper, Harmonosky does not disclose or teach anything. According to the abstract, "This paper reviews recent developments using simulation as a tool in



real-time scheduling.” At best, this reference shows that the kanban is released to the physical system without going to a simulator to test for validity.

Accordingly, Harmonosky does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Harmonosky does not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Harmonosky fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Harmonosky cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(xvii) Marriott (1994 Winter Sim. Proc.) is a tutorial article on the use of a particular simulation-based finite capacity scheduling system called PROVISA. Simulation based modeling is discussed, whereby the simulation model and the scheduler interact in an overall scheduling system. There is no separate simulator of the production line that can receive the output of the schedule generator. Output of the schedule generator is analyzed “through generated reports, and the Comparison and Planning Board modules.”

Marriott does not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Marriott does not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Marriott fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Marriott cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(xviii) Krishnamurthi et al. (1993 Winter Sim. Proc.) is cited and applied to disclose “the state of the prior art regarding on-line simulation in section 2.” Office Action at para. 29. Applicant objects to this rejection as improper, as well as a blatant attempt by the Examiner to introduce and apply numerous references not of record. Applicant requests that these references be supplied and addressed individually, with particularity, or this rejection must be withdrawn.

Section 2.1 in Krishnamurthi et al. discusses on-line simulation for real time scheduling as discussed in the “existing literature,” generally consisting of “a data acquisition model, a simulation model and a control program.” However, there is no

discussion in Krishnamurthi et al. of a separate simulator that receives scheduling output and determines validity.

Accordingly, Krishnamurthi et al. do not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Krishnamurthi et al. do not disclose, teach or suggest determining the validity of the kanban by the simulator **prior** to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Krishnamurthi et al. fail to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Krishnamurthi et al. cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

(xix) Manivannan et al. (1991 Winter Sim. Proc.) discloses real-time control of a manufacturing cell using knowledge-based simulation. The framework integrates data collection devices with a dynamic knowledge base and a simulation model. Feedback data is used to generate control output back to the manufacturing cell. See Figs 1 and 6, and section 3.1.

Manivannan et al. do not disclose, teach or suggest a simulator that simulates operation of the production line and determines validity of the electronic kanban, the

simulator receiving as input the electronic kanban from the production scheduling model and production line feedback data from the database. Additionally, Manivannan et al. do not disclose, teach or suggest determining the validity of the kanban by the simulator prior to release, nor the output of the kanban following determination of its validity by the simulator.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Manivannan et al. fails to disclose, either explicitly or implicitly, at least the above-noted features recited in independent claims 37 and 41, Manivannan et al. cannot anticipate these claims. At least in view of the foregoing, claims 37 and 41 are allowable, and the rejection should be reconsidered and withdrawn. Claims 38-40, depending from claim 37 and claims 42-50 depending from claim 41, are allowable as depending from allowable base claims, as well as the additional features they recite, particularly within the claimed combination. Withdrawal of this rejection is respectfully requested.

### III. Conclusion

For the foregoing reasons, Applicant submits that the independent claims are allowable over the art of record. The dependent claims are also allowable for at least the reasons given above with respect to the independent claims and because they recite features which are patentable in their own right. Individual consideration of the dependent claims is respectfully requested.

The claims now pending are believed allowable, and favorable consideration of the claims in light of the above remarks is courteously solicited.

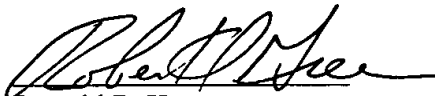
If the Examiner believes that this application is not yet in condition for allowance, then due to the overwhelming number of procedural errors discussed above, Applicant further requests that the finality of this Office Action be withdrawn, and that another Office Action be forthcoming.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

Respectfully submitted,

DATE:

March 5, 2001



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